

REMARKS

Claims 1, 2, 4-5 and 6-8, 10 and 20 are all the claims pending in the application. Claim 5 is canceled by way of this Amendment. Claim 20 and 21 are added to further define the invention by way of this Amendment.

I. Claim Objections:

Claim 5 is objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form. Applicants cancel claim 5, thereby rendering the objection moot.

II. Claim Rejections - § 112:

Claims 1, 2, 4-8 and 10 are rejected under 35 U.S.C. § 112, first paragraph.

Applicants amend claim 1 and submit that one of ordinary skill in the art would have understood by the originally filed disclosure that the urethane polymer and the acrylic polymer could be bonded together.

For example, the urethane polymer and the acrylic polymer of this invention can be bonded together by performing a reaction of carboxylic groups derived from acrylic acids with isocyanate groups, or when a photopolymerization initiator having a hydroxyl group in the molecule is used, by performing a reaction of hydroxyl groups at the end of the acrylic polymer with end isocyanate groups of urethane polymer. Also, see pages 12-21 of the specification. The process “can produce a urethane/acrylic block copolymer at the time of irradiation with radiation to cure. It is presumed that this effect can improve elongation and strength of the film.” Block copolymers are known to be bonded together.

III. Claim Rejections - § 103(a):

Claims 1, 2, 4-8 and 10 are rejected under 35 U.S.C. § 103(a) as obvious over Barrera (US 5,965,256) in view of Rogers Jr. (US 3,642,567).

A. Claim 1

Barrera

The reference is directed to a multi-layer protective film on a substrate, where the **substrate** may be a pressure sensitive adhesive (PSA) and where the film has an interpenetrating polymer network (**IPN**) **layer** and at least one **fluoro-containing polymer layer, which serves as the exposed layer**. The fluoro-containing polymer layer can be between the PSA layer and the IPN layer (see Abstract). An adhesive layer can also be provided on the IPN layer and covered with a release layer, as explained at col. 5, lines 57-61.

In considering the patentability of the claim with respect to Barrera in view of Rogers, the features of the IPN layer as compared to the claimed composite film are significant.

IPN Layer Composition

Barrera does not specifically define the “IPN layer” in its specification. Instead, in the Background portion of the patent, Barrera refers to two reference books, namely *Encyclopedia of Polymer Science and Engineering Vol. 8*; John Wiley & Sons, New York (1984) p. 279 and L.H. Sperling, “Interpenetrating Polymer Networks and Related Materials,” Plenum Press, New York (1981).” Barrera specifically states that “interpenetrating polymer networks (IPNs), systems comprising two independent crosslinked polymer networks, are described.” (see col. 1, line 65 to col. 2, line 4 in Barrera’s specification).

Notably, the term “IPN” is defined at the first paragraph of each reference book. (Copies were originally submitted in the July 18, 2009 Amendment). In short, an IPN is an intimate combination of two different cross-linked polymer networks (for example A and B), wherein the polymer A network is entangled in the polymer B network, but wherein there are no induced covalent bonds between the two polymers. This feature of IPN’s as having no covalent bonds between different polymers is further supported by the reference, Daniel Klempner and Kurt C. Frisch, “POLYMER ALLOYS”, Plenum Press, New York (1977) [page 97].

By contrast, in the present invention, the composite film is comprised by a composition containing a urethane polymer and a vinyl polymer which are bonded together.

Since an IPN does not possess such bonds, Barrera does not disclose a composition similar to the claimed invention.

This distinction in structure is significant because the resulting inherent properties of a bonded polymer are distinguishable from a cross-linked polymer. For instance, an IPN swells but does not dissolve in solvents while block copolymers do dissolve. Also, creep and flow are suppressed in IPN but not suppressed in block copolymers.

Hence, not only is the bonded structure of the claimed composite film distinguishable from the IPN structure of Barrera, but their resulting inherent properties are also different from each other.

Sheet Properties

The Examiner expressly admits that the sheet properties are NOT disclosed in Barrera. The Examiner asserts that the sheet properties would be inherent. However, because the structures are significantly different, there is no basis for the Examiner asserting that the IPN-

based film of Barrera would have the performance factors recited in the claims. Such features could not be inherent, in light of the difference between a bonded copolymer and an IPN layer. That is, a film having an IPN structure of cross-linked polymer networks with no covalent bonds would not have the same sheet properties as the bonded copolymer of claim 1.

In view of the difference between the composite film of the claimed invention and the composite film of Barrera, even if Barrera and Rogers were combined together, one would still fail to arrive at the claimed invention according to claim 1. That is, Rogers does not teach or suggest modifying Barrera to utilize a bonded copolymer structure in place of the IPN structure, and thus, the invention of Barrera as modified by Rogers is not structurally and compositionally equivalent to that of claim 1.

B. Dependent Claims

The dependent claims are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

C. New Claims 20-21

New claims 20 and 21 are patentable for at least the same reasons as claim 1. Moreover, these claims are patentable due to their own recitations.

The composite film comprises a block copolymer and/or graft copolymer. Block and graft copolymers are covalently bonded, thereby providing a composite material containing the characteristic properties inherent to each parent polymer block segment. Barrera which utilizes an IPN structure having cross-linked copolymers instead of a block copolymer structure, does

not include covalent bonding and thus would not have the same features as a covalently bonded polymer.

Thus, the copolymer having covalent bonds is distinguishable from Barrera, and moreover, Rogers does not provide any motivation for modifying Barrera to arrive at such a covalently bonded structure.

Therefore, claims 20 and 21 are patentable.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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23373

CUSTOMER NUMBER

Date: March 5, 2010